SEQUENCE LISTING

<110> Doorbar, John

<120> IMPROVEMENTS IN OR RELATING TO SCREENING FOR PAPILLOMA VIRUSES

<130> 18396/1074

<140> 10/008,524

<141> 2001-11-05

<150> 09/314,268

<151> 1999-05-18

<160> 179

<170> PatentIn Ver. 2.1

<210> 1

<211> 475

<212> DNA

<213> Human papillomavirus type 16

<400> 1

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<213> Homo sapiens

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Ala Asn Ser Ser Arg Asn Ala Val Ala Leu Ser Ala Ser Pro Gln Leu

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Lys Glu Ala Gln Ser Glu Lys Glu Glu Ala Pro Lys Pro Leu His Lys

35 40 45

Val Val Val Cys Val Ser Lys Lys Leu Ser Lys Lys Gln Ser Glu Leu

50 55 60

Asn Gly Ile Ala Ala Ser Leu Gly Ala Asp Tyr Arg Trp Ser Phe Asp

85 90 95

Arg Glu Tyr Lys Ser Val Lys Glu Arg Gly Val His Ile Val Ser Glu

100 105 110

His Trp Leu Leu Asp Cys Ala Gln Glu Cys Lys His Leu

115 120 125

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Leu Tyr His Ala Cys Asp Gln Leu Gly Trp Thr Lys Pro Thr Lys Ile

35 40 45

His Ile His Ala Tyr Asn Leu Ala Leu Gln Gly Arg Asp Ile Ile Gly

65 70 75 80

Leu Asn Ala Leu Leu Glu Thr Pro Gln Arg Leu Phe Ala Leu Val Leu
85 90 95

Thr Pro Thr Arg Ser Trp Pro Phe Arg Ser Gln Ser Ser Leu Lys Pro
100 105 110

Trp Ser Ser Ile Gly Val Gln Ser Ala Val Ile Val Gly Gly Ile Asp
115 120 125

Ser Met Ser Gln Ser Leu Ala Leu Ala Lys Lys Pro His Ile Ile Ile
130 135 140

Ala Thr Pro Gly Arg Leu Ile Asp His Leu Glu Asn Thr Lys Gly Phe
145 150 155 160

Asn Leu Arg Ala Leu Lys Tyr Leu Val Met Asp Glu Ala Asp Arg Ile
165 170 175

Leu Asn Met Asp Phe Glu Thr Glu Val Asp Lys Ile Leu Lys Val Ile
180 185 190

Pro Arg Asp Arg Lys Thr Phe Leu Phe Ser Ala Thr Met Thr Lys Lys
195 200 205

Val Ser Ser Lys Tyr Gln Thr Val Glu Lys Leu Gln Gln Tyr Tyr Ile
225 230 235 240

Phe Ile Pro Ser Lys Phe Lys Asp Thr Tyr Leu Val Tyr Ile Leu Asn
245 250 255

Glu Leu Ala Gly Asn Ser Phe Met Ile Phe Cys Ser Thr Cys Asn Asn
260 265 270

Thr Gln Arg Thr Ala Leu Leu Leu Arg Asn Leu Gly Phe Thr Ala Ile
275 280 285

Pro Leu His Gly Gln Met Ser Lys Arg Leu Gly Ser Leu Asn Lys Phe
290 295 300

Lys Ala Lys Ala Arg Ser Ile Leu Leu Ala Thr Asp Val Ala Ser Arg
305 310 315 320

Gly Leu Asp Ile Pro His Val Asp Val Val Val Asn Phe Asp Ile Pro
325 330 335

Thr His Ser Lys Asp Tyr Ile His Arg Val Gly Arg Thr Ala Arg Ala
340 345 350

Leu Phe Gln Arg Ile Glu His Leu Ile Gly Lys Lys Leu Pro Gly Phe
370 375 380

Pro Thr Gln Asp Asp Glu Val Met Met Leu Thr Glu Arg Val Ala Glu
385 390 395 400

Ala Gln Arg Phe Ala Arg Met Glu Leu Arg Glu His Gly Glu Lys Lys
405 410 415

Lys Arg Ser Arg Glu Asp Ala Gly Asp Asn Asp Asp Thr Arg Gly Cys
420 425 430

Tyr Val Cys Gln Glu Gln Gly Gly Trp Arg Lys Asn Glu Glu Ala Glu
435 440 445

Arg Pro Leu Ile Thr Phe Met Lys Ala Arg Val Leu Leu Phe Cys Lys
450 455 460

Arg Glu Leu Glu Asn Glu Thr Cys Ser Asn Arg Asp His Glu Thr Glu
465 470 475 480

Ile Gly Gln Asn Cys Val Gln Asn Val Leu Ser
485 490

<213> Human papillomavirus type 16

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Pro Ala Ala Ala Thr Lys Tyr Pro

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Leu Gly Ser Thr Trp Pro Thr Thr

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Gly Ser Thr Trp Pro Thr Thr Pro

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Ser Thr Trp Pro Thr Thr Pro Pro

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Trp Pro Thr Thr Pro Pro Arg Pro

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Pro Thr Thr Pro Pro Arg Pro Ile

1 5

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Thr Thr Pro Pro Arg Pro Ile Pro

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Thr Pro Pro Arg Pro Ile Pro Lys

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Pro Arg Pro Ile Pro Lys Pro Ser

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Ser Pro Trp Ala Pro Lys Lys His

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Trp Ala Pro Lys Lys His Arg Arg

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Pro Lys Lys His Arg Arg Leu Ser

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Lys His Arg Arg Leu Ser Ser Asp

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Arg Arg Leu Ser Ser Asp Gln Asp

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Leu Ser Ser Asp Gln Asp Gln Ser

1 5

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Ser Asp Gln Asp Gln Ser Gln Thr

1 5

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Asp Gln Asp Gln Ser Gln Thr Pro

1 5

<210> 50

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Gln Asp Gln Ser Gln Thr Pro Glu

1 5

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<211> 8

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Asp Gln Ser Gln Thr Pro Glu Thr

1 5

<210> 52

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<223> Description of Artificial Sequence: synthetic octapeptide antigen

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Gln Ser Gln Thr Pro Glu Thr Pro

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Ser Gln Thr Pro Glu Thr Pro Ala

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Gln Thr Pro Glu Thr Pro Ala Thr

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Thr Pro Glu Thr Pro Ala Thr Pro

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Pro Glu Thr Pro Ala Thr Pro Leu

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Glu Thr Pro Ala Thr Pro Leu Ser

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Thr Pro Ala Thr Pro Leu Ser Cys

1 5

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Pro Ala Thr Pro Leu Ser Cys Cys

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Ala Thr Pro Leu Ser Cys Cys Thr

1 5

<210> 61

<211> 8

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Thr Pro Leu Ser Cys Cys Thr Glu

1 5

<210> 62

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Pro Leu Ser Cys Cys Thr Glu Thr

1 5

<210> 63

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Leu Ser Cys Cys Thr Glu Thr Gln

1 5

<210> 64

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Ser Cys Cys Thr Glu Thr Gln Trp

1 5

<210> 65

<211> 8

<212> PRT

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<223> Description of Artificial Sequence: synthetic octapeptide antigen

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Cys Cys Thr Glu Thr Gln Trp Thr

1 5

<210> 66

<211> 8

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Cys Thr Glu Thr Gln Trp Thr Val

1 5

<210> 67

<211> 8

<212> PRT

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Thr Glu Thr Gln Trp Thr Val Leu

1 5

<210> 68

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Glu Thr Gln Trp Thr Val Leu Gln

1 5

<210> 69

<211> 8

<212> PRT

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Thr Gln Trp Thr Val Leu Gln Met

1 5

<210> 70

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<223> Description of Artificial Sequence: synthetic octapeptide antigen

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Gln Trp Thr Val Leu Gln Ser Ser

1 5

<210> 71

<211> 8

<212> PRT

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Trp Thr Val Leu Gln Ser Ser Leu

1 5

<210> 72

<211> 8

<220>

<223> Description of Artificial Sequence: synthetic octapeptide antigen

<400> 72

Thr Val Leu Gln Ser Ser Leu His

1 5

<210> 73

<211> 8

<212> PRT

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Val Leu Gln Ser Ser Leu His Leu

1 5

<210> 74

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Leu Gln Ser Ser Leu His Leu Thr

1 5

<210> 75

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Gln Ser Ser Leu His Leu Thr Ala

1 5

<210> 76

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<223> Description of Artificial Sequence: synthetic octapeptide antigen

<400> 76

Ser Ser Leu His Leu Thr Ala His

1 5

<210> 77

<211> 8

<212> PRT

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Ser Leu His Leu Thr Ala His Thr

1 5

<210> 78

<220>

<223> Description of Artificial Sequence: synthetic octapeptide antigen

<400> 78

His Leu Thr Ala His Thr Lys Asp
1 5

<210> 79

<211> 8

<212> PRT

<213> Artificial Sequence

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<223> Description of Artificial Sequence: synthetic octapeptide antigen

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His Leu Thr Ala His Thr Lys Asp
1 5

<210> 80

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<223> Description of Artificial Sequence: synthetic octapeptide antigen

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Leu Thr Ala His Thr Lys Asp Gly

1 5

<210> 81

<211> 8

<212> PRT

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Thr Ala His Thr Lys Asp Gly Leu

1 5

<210> 82

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<223> Description of Artificial Sequence: synthetic octapeptide antigen

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Ala His Thr Lys Asp Gly Leu Thr

1 5

<210> 83

<211> 8

<212> PRT

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<223> Description of Artificial Sequence: synthetic octapeptide antigen

<400> 83

His Thr Lys Asp Gly Leu Thr Val

1 5

<210> 84

<220>

<223> Description of Artificial Sequence: synthetic octapeptide antigen

<400> 84

Thr Lys Asp Gly Leu Thr Val Ile

1 5

<210> 85

<211> 8

<212> PRT

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<400> 85

Lys Asp Gly Leu Thr Val Ile Val

1 5

<210> 86

<220>

<223> Description of Artificial Sequence: synthetic octapeptide antigen

<400> 86

Asp Gly Leu Thr Val Ile Val Thr

1 5

<210> 87

<211> 8

<212> PRT

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<400> 87

Gly Leu Thr Val Ile Val Thr Leu

1 5

<210> 88

<220>

<223> Description of Artificial Sequence: synthetic octapeptide antigen

<400> 88

Leu Thr Val Ile Val Thr Leu His

1 5

<210> 89

<211> 8

<212> PRT

<213> Artificial Sequence

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<223> Description of Artificial Sequence: synthetic octapeptide antigen

<400> 89

Thr Val Ile Val Thr Leu His Pro

1 5

<210> 90

<400> 90

Met Ala Asp Pro Ala Ala Ala Thr Lys Tyr Pro Leu Leu Lys Leu Leu
1 5 10 15

Gly Ser Thr Trp Pro Thr Thr Pro Pro Arg Pro Ile Pro Lys Pro Ser
20 25 30

Pro Trp Ala Pro Lys Lys His Arg Arg Leu Ser Ser Asp Gln Asp Gln
35 40 45

Ser Gln Thr Pro Glu Thr Pro Ala Thr Pro Leu Ser Cys Cys Thr Glu
50 55 60

Thr Gln Trp Thr Val Leu Gln Ser Ser Leu His Leu Thr Ala His Thr
65 70 75 80

Lys Asp Gly Leu Thr Val Ile Val Thr Leu His Pro
85 90

<210> 91

<211> 126

<212> PRT

<213> Human papillomavirus

1 5 10 15

Thr Pro Thr Thr Gln Pro Tyr Pro Arg Val Thr Pro Pro Ser Asn Arg
20 25 30

Arg Pro Ser Thr Thr Pro Asn Ser Gln Asp Arg Gly Arg Pro Arg Arg
35 40 45

Ser Asp Lys Asp Ser Arg Lys His Leu Tyr Ala Asp Gly Leu Thr Asp
50 55 60

Gly Glu Asp Pro Glu Val Pro Glu Val Glu Asp Glu Glu Lys Glu Asn
65 70 75 80

Gln Arg Pro Leu Gly His Pro Asp Leu Ser Leu Leu Arg Glu Thr Leu
85 90 95

Glu Val Tyr Thr Gln Arg Leu Lys Arg Asp Ile Leu Gln Gln Asp Leu
100 105 110

Asp Asp Phe Cys Arg Lys Leu Gly Ile His Pro Trp Ser Val
115 120 125

<210> 32

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<223> Description of Artificial Sequence:HPV E4

Consensus Amino Acid Sequence

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Thr Pro Thr Pro Pro Pro Arg Pro Pro Pro Pro Pro Pro Pro Pro Arg

20 25 30

Pro Trp Ala Gly Pro Lys Lys Pro Thr Arg Gly Pro Pro Arg Arg Arg

35 40 45

Arg Leu Glu Ser Asp Ser Asp Asp Ser Gly Glu Val Glu Pro Thr Pro

50 55 60

Thr Thr Pro Pro Ala Pro Pro Thr Gly Asp Glu Glu Val Glu Pro Pro

65 70 75 80

Trp Thr Val Gln Thr Leu Leu Ser Met Val Thr Leu Thr Trp Glu Tyr

85 90 95

Thr Phe Asp Gly Leu Val Val Ile Val Gln Asp Leu Glu Asp Tyr Trp

<210> 93

<211> 49

<212> PRT

<213> Artificial Sequence

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<223> Description of Artificial Sequence: HPV E4 protein consenus amino acid sequence, amino acids 27-73.

<400> 93

Pro Pro Pro Pro Pro Arg Pro Trp Ala Gly Pro Lys Lys Pro Thr Arg
1 5 10 15

Gly Pro Pro Arg Arg Arg Arg Leu Glu Ser Asp Ser Asp Ser Asp Ser
20 25 30

Gly Glu Val Glu Gly Pro Thr Pro Thr Thr Pro Pro Ala Pro Pro Thr
35 40 45

Gly

<212> PRT

<213> Human papillomavirus type 54

<400> 94

His His Val Pro Thr Thr Pro Gln Lys Gln Ser Arg Ala Arg Arg Arg

1 5 10 15

Leu Glu Asn Glu Leu Glu Ser Thr Ala Gln Thr Ser Asn His Thr Ala

20 25 30

Pro Gln Thr

35

<210> 95

<211> 48

<212> PRT

<213> Human papillomavirus type 32

<400> 95

Pro Ser Gln Gly Val Thr Ala Thr Thr Ala Gln Thr Glu Tyr Tyr Thr

1 5 10 15

Lys Thr Pro Pro Arg Pro Pro Arg Arg Glu Asn Asp Thr Asp Ser Leu

20 25 30

<210> 96

<211> 50

<212> PRT

<213> Human papillomavirus type 42

<400> 96

Pro Leu Thr Thr Thr Thr Gln Thr Val Gln Thr Glu Gln His Thr Thr

1 5 10 15

Cys Pro Ser Lys Pro His Arg His Glu Asn Asp Thr Asp Ser Val Asp

20 25 30

Ser Arg His His Ser Thr Cys Ser Thr Gln Thr Pro Ala Ser Pro Ala

35 40 45

Ser Pro

50

<210> 97

<400> 97

Lys Pro Arg Trp Ala Arg Pro Lys Asp Arg Ser Lys Ser Asp Ser Asp

1 5 10 15

Ser Arg Arg Ser Thr Gly Ser Ser Ser Ser Asn Ser Ser Ser Asn Ser

20 25 30

Asn Ser Asn Asn Ile Pro Lys Pro Pro Pro Arg Lys Pro Leu Asn

35 40 45

<210> 98

<211> 39

<212> PRT

<213> Human papillomavirus type 28

<400> 98

Lys Pro Arg Trp Ala Arg Pro Lys Asp Arg Ser Lys Asn Asp Ser Asp

1 5 10 15

Ser Arg His Ser Thr Gly Ser Ser Ser Ser Asp Ser Thr Pro Lys Pr

20 25 30

Pro Pro Arg Lys Pro Leu Asn

<210> 99

<211> 40

<212> PRT

<213> Human papillomavirus type 10

<400> 99

Lys Pro Arg Trp Ala Arg Pro Arg Asp Arg Asn Lys Ser Asp Ser Asp

1 5 10 15

Ser Arg Arg Ser Thr Asp Ser Thr Ser Ser Ser Asp Lys Gly Pro Lys

20 25 30

Ile Pro Pro Arg Arg Pro Arg Asn

35 40

<210> 100

<211> 51

<212> PRT

<213> Human papillomavirus type 29

<400> 100

Lys Pro Arg Trp Gly Leu Arg Arg Asp Arg Asn Gly Asn Asp Ala Gly

1 5 10 15

Leu Lys Gln Ser Gly Leu Gly His Ser Ser Ser Ser Ser Ser Ser Thr

Ser Ser Ser Ser Ser Asn Arg Pro Arg Pro Thr Pro Pro Pro Arg Lys

35 40 45

Pro Val His

50

<210> 101

<211> 41

<212> PRT

<213> Human papillomavirus type 61

<400> 101

Pro Pro Arg Ala Trp Ala Pro Pro Arg His Pro Pro Arg Cys Arg Arg

1 5 10 15

Arg Leu Ile Ser Asp Ser Asp Ser Thr Glu Thr Glu Ser Ser Ser Pro

20 25 30

Thr Gln His Lys Lys Thr Thr Thr Ser

35 40

<210> 102

<211> 45

<212> PRT

<400> 102

Gln Glu Glu Gln Leu Arg Pro Pro Lys Arg Cys Ala Pro Pro Arg Arg

1 5 10 15

Gln Arg Val Arg Arg Pro Ser Ala Ser Val Ser Ser Ser Asp Ser Ser

20 25 30

Ile Pro Gly Pro Thr Leu Arg Glu Arg Ser Glu Arg Gly

35 40 45

<210> 103

<211> 45

<212> PRT

<213> Human papillomavirus type 27

<400> 103

Glu Gln Glu Gln Leu Arg Pro Gln Thr Cys Cys Ala Pro Pro Arg Arg

1 5 10 15

His Arg Val Arg Arg Pro Ser Ala Ser Gly Ser Ser Ser Asp Ser Ser

20 25 30

Ile Ser Gly Pro Thr Leu Arg Glu Arg Ser Glu Arg Gly

35 40 45

<211> 41

<212> PRT

<213> Human papillomavirus type 57

<400> 104

Gln Ser Arg Pro His Ser Arg Thr Pro Pro Arg Arg His Arg Val Arg

1 5 10 15

His Pro Ser Ala Ser Gly Ser Ser Ser Asp Ser Ser Gly Asn Ser Pro

20 25 30

Thr Leu Arg Gly Arg Ser Glu Lys Gly

35 40

<210> 105

<211> 39

<212> PRT

<213> Human papillomavirus type 26

<400> 105

Pro Thr Cys Pro Trp Ala Pro Arg Lys Pro Arg Arg His Thr His Gln

1 5 10 15

Ser Asp Asp Asp Ser Val Asp Leu Thr Pro Pro Ser Pro Gln Ser Pro

20 25 30

35

<210> 106

<211> 40

<212> PRT

<213> Human papillomavirus type 30

<400> 106

Pro Pro Arg Pro Trp Ala Pro Thr Lys Pro Arg Pro Pro His Gly Arg
1 5 10 15

Glu Asn Val Leu Glu Pro Gln Ser Pro Thr Val Gln Thr Pro Pro Asp
20 25 30

Ser Pro Leu Pro Glu Ser Pro Thr
35 40

<210> 107

<211> 40

<212> PRT

<213> Human papillomavirus type 53

<400> 107

Pro Pro Arg Pro Trp Ala Pro Thr Lys Pro His His Pro Gly Thr Arg

Glu Asn Val Pro Glu Pro Gln Ser Pro Thr Val Leu Thr Pro Pro His

20 25 30

Ser Pro Leu Pro Gln Pro Glu Ser

35 40

<210> 108

<211> 39

<212> PRT

<213> Human papillomavirus type 56

<400> 108

Pro Pro Pro Arg Pro Trp Ala Thr Lys Thr Pro Gln Tyr Pro Thr Asp

1 5 10 15

Gln Glu Asn Asp Pro Asp Tyr Gly Asn Gln Asn Leu Thr Pro Pro Glu

20 25 30

Ser Pro Thr Gln Ser Val Ser

35

<210> 109

<211> 37

<212> PRT

<400> 109

Pro Pro Leu Trp Ala Pro Lys Thr Pro Arg Tyr Pro Thr Asp Gln Glu
1 5 10 15

Asn Asp Pro Glu Gln Val Asn Gln Asn Leu Thr Pro Pro Glu Ser Pro
20 25 30

Thr His Thr Val Ser
35

<210> 110

<211> 29

<212> PRT

<213> Human papillomavirus type 18

<400> 110

Ala Pro Cys Pro Trp Ala Pro Gln Arg Pro Thr Ala Arg Arg Arg Leu
1 5 10 15

Leu His Asp Leu Asp Thr Val Asp Ser Arg Arg Ser Ser
20 25

<210> 111

<211> 31

<212> PRT

<400> 111

Lys Pro His Pro Trp Ala Pro Gln Asn Pro Thr Ser Arg Arg Arg Leu

1 5 10 15

Leu Ser Asp Leu Asp Ser Val Asp Ser Gln Ser Ser Thr Thr Asp

20 25 30

<210> 112

<211> 32

<212> PRT

<213> Human papillomavirus type 39

<400> 112

Pro Gln Gln Pro His Ala Pro Lys Lys Gln Ser Arg Arg Arg Leu Glu

1 5 10 15

Ser Asp Leu Asp Ser Val Gln Ser Gln Ser Pro Leu Ser Pro Thr Glu

20 25 30

<210> 113

<213> Human papillomavirus type 70

<400> 113

Pro Gln Gln Pro His Ala Pro Lys Lys Leu Ser Arg Arg Arg Leu Ala
1 5 10 15

Ser Val Glu Ser Pro Asp Pro Gln Lys Gln Thr
20 25

<210> 114

<211> 32

<212> PRT

<213> Human papillomavirus type 59

<400> 114

Lys Pro Arg Thr Trp Ala Pro Lys Arg Gly Thr Val Arg Arg Arg Leu
1 5 10 15

Glu Ser Asp Gln Asp Ser Val Asp Thr His Ser Thr Leu Ser Leu Pro
20 25 30

<212> PRT

<213> Human papillomavirus type 7

<400> 115

Pro Pro Thr Pro Pro Arg Cys Thr Thr Pro Pro Thr Pro Cys Pro Arg
1 5 10 15

Arg Pro Pro Lys Tyr Thr Thr Thr Ala Thr His Arg Pro Glu Ser Glu
20 25 30

Gly Glu Thr Glu Thr Cys Pro Ser Val Gln Trp Thr Asp Val
35 40 45

<210> 116

<211> 41

<212> PRT

<213> Human papillomavirus type 40

<400> 116

Pro Thr Pro Pro Thr Pro Pro Pro Gln Arg Pro Pro Lys Arg Ser Ala
1 5 10 15

Pro Pro Arg His Arg Pro Glu Ser Asp Glu Glu Thr Asp Thr Cys Pro
20 25 30

<210> 117

<211> 35

<212> PRT

<213> Human papillomavirus type 16

<400> 117

Lys Pro Ser Pro Trp Ala Pro Lys Lys His Arg Arg Leu Ser Ser Asp
1 5 10 15

Gln Asp Gln Ser Gln Thr Pro Glu Thr Pro Ala Thr Pro Leu Ser Cys
20 25 30

Cys Thr Glu
35

<210> 118

<211> 34

<212> PRT

<213> Human papillomavirus type 35

<400> 118

Lys Pro Ala Pro Trp Ala Pro Gln Lys Pro Arg Arg Gln Ile Thr Asn
1 5 10 15

20 25 30

Asp Ser

<210> 119

<211> 39

<212> PRT

<213> Human papillomavirus type 31

<400> 119

Lys Pro Ala Pro Trp Ala Pro Val Lys Val Cys Gly Gly Arg Arg Arg
1 5 10 15

Leu Leu Ser Asp Gln Glu Gln Ser Gln Ser Thr Glu Thr Pro Thr Thr
20 25 30

Pro Thr Ser Cys Cys Glu Ala
35

<210> 120

<211> 38

<212> PRT

<213> Human papillomavirus type 52

Pro Gln Cys Pro Trp Val Pro Lys Thr His Thr Tyr Asn His His Arg

1 5 10 15

Asn Asp Asp Asp Gln Thr Ser Gln Thr Pro Glu Thr Pro Ser Thr Pro

20 25 30

Thr Thr Phe Cys Gly Asp

35

<210> 121

<211> 26

<212> PRT

<213> Human papillomavirus type 33

<400> 121

His His Lys Gln Arg Pro Asn Asp Asp Asp Leu Gln Thr Pro Gln Thr

1 5 10 15

Pro Pro Ser Pro Leu Gln Ser Cys Ser Val

20 25

<210> 122

<211> 32

<212> PRT

<400> 122

Pro Thr Thr Lys Val His Arg Gly Gln Ser Asp Asp Asp Ser Ile Tyr
1 5 10 15

Gln Thr Pro Glu Thr Thr Pro Ser Thr Pro Gln Ser Ile Gln Thr Ala
20 25 30

<210> 123

<211> 29

<212> PRT

<213> rhesus monkey papillomavirus

<400> 123

Pro Thr Pro Ala Pro Arg Lys Thr Cys Gly His Arg Leu Gln Ser Glu
1 5 10 15

Cys Val Gly Gln Thr Gln Val Glu Ile Gln Cys Gly Pro
20 25

<210> 124

<211> 48

<400> 124

Pro Leu Cys Pro Gln Ala Pro Arg Lys Thr Gln Cys Lys Arg Arg Leu

1 5 10 15

Gly Asn Glu His Glu Glu Ser Asn Ser Pro Leu Ala Thr Pro Cys Val

20 25 30

Trp Pro Thr Leu

35

<210> 125

<211> 34

<212> PRT

<213> Human papillomavirus type 11

<400> 125

Leu Gln Cys Pro Pro Ala Pro Arg Lys Thr Ala Cys Arg Arg Arg Leu

1 5 10 15

Gly Ser Glu His Val Asp Arg Pro Leu Thr Thr Pro Cys Val Trp Pro

20 25 30

Thr Ser

<210> 126

<211> 40

<212> PRT

<213> Human papillomavirus type 44

<400> 126

His Arg Pro His Pro His Cys Pro Leu Ala Pro Pro Arg Thr Ala Trp

1 5 10 15

Thr Arg Arg His Val Asn Asp Pro Glu Asp Pro Pro Gln Thr Pro Thr

20 25 30

Thr Pro Glu Thr Pro Ser Val Ser

35 40

<210> 127

<211> 40

<212> PRT

<213> Human papillomavirus type 55

<400> 127

His Arg Pro His Leu His Cys Pro Pro Ala Pro Pro Arg Asn Ala Trp

1 5 10 15

Thr Arg Arg His Val Asn Asp Pro Glu Asp Pro Pro Gln Thr Pro Thr

Thr Pro Gly Thr Pro Ser Val Ser

35 40

<210> 128

<211> 39

<212> PRT

<213> Human papillomavirus type 13

<400> 128

Pro Gln Cys Pro Ala Ala Pro Arg Lys Asn Val Cys Lys Arg Arg Leu

1 5 10 15

Val Asn Asp Asn Glu Asp Leu His Val Pro Leu Glu Thr Pro Arg Thr

20 25 30

His Lys Ala Leu Cys Val Ser

35

<210> 129

<211> 40

<212> PRT

<213> Pygmy chimpanzee papillomavirus

<400> 129

Pro Ile Asn Asp Phe Glu Asp Pro Pro Thr Val Leu Glu Asn Ser Lys
20 25 30

Thr Pro Leu Thr Leu Cys Val Pro
35 40

<210> 130

<211> 22

<212> PRT

<213> Human papillomavirus type 34

<400> 130

Ala Thr His Arg Thr Arg Val Cys Gln His Gly Asn Gly Ile Asp Ser
1 5 10 15

Val Thr Gln Thr Arg Gly
20

<210> 131

<211> 71

<212> PRT

<213> Human papillomavirus type 19

1 5 10 15

Ala Arg Asn Asp Gln Gly Pro Asn Pro Ser Pro Gly Arg Gly Arg Gly

20 25 30

Arg Gly Leu Phe Arg Leu Thr Gly Asp His Asp Pro Asn Pro Glu Glu

35 40 45

Arg Pro Pro Pro Leu Glu Gly Glu Val Glu Gly His Pro Pro Pro Pro

50 55 60

Val Thr Asn Pro Pro Gly His

65 70

<210> 132

<211> 95

<212> PRT

<213> Human papillomavirus type 25

<400> 132

Pro Pro Ala Gly His Asp Asp Ser Lys Pro Lys Arg Ala Arg Gly Asp

1 5 10 15

Gln Gly Pro Ser Pro Gly Pro Gly Pro Ser Pro Ala Pro Val Ser Asp

20 25 30

35 40 45

Asp Gln Asp Pro Asp Pro Glu Glu Lys Pro Gln Pro Glu Gly Glu Val
50 55 60

Gln Gly His Pro Gln Pro Pro Pro Val Thr Glu Pro Gln Gly His Leu
65 70 75 80

Pro Pro Pro Pro Leu Pro Pro Pro Asn Gly His Asn Asp Arg Asp
85 90 95

<210> 133

<211> 99

<212> PRT

<213> Human papillomavirus type 20

<400> 133

Gly Thr Asp Gly Asp Leu Pro Val Gly Gln Gly Glu Gln Pro Lys Arg
1 5 10 15

Ala Arg Gly Asp Gly Pro Gly Gln Ser Pro Ser Pro Ser Pro Gly Arg
20 25 30

Gly Arg Gly Arg Gly Thr Gly Leu Gly Leu Gly Leu Gly Leu Asn Arg
35 40 45

50 55 60

Ser Pro Ser Ala Pro Leu Pro Pro Pro Pro Gln Pro Pro Pro Asp Gly
65 70 75 80

Gln Val Glu Gly His Pro Pro Pro Pro Pro Pro Pro Pro His Asn Gly
85 90 95

Arg Asp Ser

<210> 134

<211> 106

<212> PRT

<213> Human papillomavirus type 21

<400> 134

Gly Thr Asp Gly Asp Arg Pro Val Gly Pro Gly Glu Arg Pro Lys Arg
1 5 10 15

Ile Lys Gly Gly Asp Arg Gly Pro Ser Pro Gly Arg Gly Arg Gly Arg
20 25 30

Gly Arg Gly Ser Asp Pro Asp Pro Gly Pro Asp Pro Gly Pro Ile Pro
35 40 45

50 55 60

Glu Gly Lys Cys Pro Ser Ser Leu Pro Pro Pro Pro Pro Pro Pro
65 70 75 80

Gln Pro Thr Thr Pro Pro Glu Gly Gln Gly Glu Gly His Pro Pro Pro
85 90 95

Pro Pro Pro Pro Pro Asn Gly His Asp Gly
100 105

<210> 135

<211> 88

<212> PRT

<213> Human papillomavirus type 14

<400> 135

Glu Gly Thr Asp Ala Asp Arg Pro Val Gly Pro Gly Glu Arg Pro Lys
1 5 10 15

Arg Gly Arg Gly Gly Asp Arg Gly Pro Ser Pro Gly Arg Gly Arg Gly
20 25 30

Arg Gly Leu Gly Ser Asp Leu Asp Pro Gly Arg Asn Arg Leu Ser Gly
35 40 45

50 55 60

Glu Ser Gln Pro Pro Pro Glu Gly Glu Val Glu Gly His Pro Pro Pro
65 70 75 80

Pro Pro Asn Gly His Asn Gly His
85

<210> 136

<211> 90

<212> PRT

<213> Human papillomavirus type 5

<400> 136

Ser Gln Gly Asp Arg Lys Arg Ser Lys Gly Asp Gln Gly Pro Asp Thr
1 5 10 15

Gly Pro Gly Leu Gly Pro Gly Arg Gly Pro Ser Pro Lys Pro Thr Pro
20 25 30

Leu Gly Pro Pro Pro Gly Pro Gly Pro Arg Arg Ser Pro Arg Leu Gly
35 40 45

Pro Leu Gln Ala Asp Arg Asp Pro Glu Glu Gly Pro Gln Pro Pro Ala
50 55 60

65 70 75 80

Pro Pro Pro Pro Ala Pro His Asn Gly His

85 90

<210> 137

<211> 87

<212> PRT

<213> Human papillomavirus type 36

<400> 137

Gly Gln Gly Asp Arg Lys Arg Ser Lys Gly Asp Gln Gly Pro Asp Thr

1 5 10 15

Asp Pro Leu Gly Pro Asp Arg Gly Pro Ser Pro Gly Pro Thr Pro Gln

20 25 30

Pro Leu Gly Leu Pro Pro Pro Gly Leu Gly Pro Arg Arg Ser Pro Arg

35 40 45

Leu Gly Val Ser Gly Tyr Gln Pro Asp His Asp Pro Glu Ala Pro Leu

50 55 60

Glu Gly Glu Val Glu Gly Gly Gly His Gly His His Pro Pro Pro Pro

65 70 75 80

85

<210> 138

<211> 87

<212> PRT

<213> Human papillomavirus type 47

<400> 138

Gln Gly Asp Arg Lys Arg Thr Lys Gly Asp Pro Asp Pro Asp Pro Gly
1 5 10 15

Arg Gly Pro Val Leu Lys Pro Thr Leu Pro Pro Pro Pro Pro Pro Pro
20 25 30

Pro Thr Gly Pro Gly Leu Arg Arg Ser Thr Arg Leu Val Leu Val Pro
35 40 45

Gly Gln Gly Pro Pro Pro Asp Leu Pro Ala Pro Pro Val Glu Gly Glu
50 55 60

Val Glu Gly His Pro Gln Gly Lys Asp Arg Asp His Pro Pro Pro Thr
65 70 75 80

Pro Gln Asn Gly His Gly Lys
85

<210> 139

<211> 76

<212> PRT

<213> Human papillomavirus type 12

<400> 139

Gly Asp Arg Lys Arg Ser Lys Gly Asp Gln Gly Arg Asp Thr Ala Pro
1 5 10 15

Ser Leu Thr Pro Gly Arg Ala Pro Ser Pro Lys Pro Gly Pro Leu Ala
20 25 30

Pro Pro Pro Tyr Pro Gly Pro Pro Gly Pro Arg Arg Ser His Arg Leu
35 40 45

Gly Thr Gly Gly Arg Asp Arg Asn Pro Glu Glu Gly Gly Val Glu Gly
50 55 60

His Pro Pro Thr Pro Pro Leu Ser Gly Gly Asp Pro
65 70 75

<210> 140

<211> 91

<212> PRT

<213> Human papillomavirus type 8

Gln Asp Arg Lys Lys Ser Arg Gly Asp Gln Gly Arg Asp Thr Ala Pro

1 5 10 15

Gly Leu Ala Pro Gly Arg Ser Pro Gly Leu Gly Pro Leu Ala Pro Pro

20 25 30

Pro Tyr Pro Gly Pro Gly Pro Arg Arg Ser Pro Arg Gln Phe Gly Pro

35 40 45

Gly Pro Asp Arg Asp Pro Glu Asp Gly Leu Gln Pro Pro Leu Gly Glu

50 55 60

Gly Gln Val Glu Gly His Pro Gly Asp Gly Asp Gln Pro Gln Gly His

65 70 75 80

Pro Pro Pro Thr Pro Ser Asn Gly His Lys Gly

85 90

<210> 141

<211> 70

<212> PRT

<213> Human papillomavirus type 31

<400> 141

Pro Leu Thr Pro Asp Ala Asp Asp Asp Pro Arg Pro [illegible]

Lys Gly Asp Glu His Gly Pro Ala Pro Gly Arg Ala Ala Ala Pro Leu

20 25 30

Lys Leu Asp Leu Asp Pro Pro Gln Gly Gly Pro Asp Gln Pro Pro Gly

35 40 45

Ala Thr Gly Gly Val Gly Glu Thr Pro Pro Glu Gly Asn Glu Glu Ser

50 55 60

Gln Pro Pro Pro Gly Glu

65 70

<210> 142

<211> 61

<212> PRT

<213> Human papillomavirus type 15

<400> 142

Thr Thr Glu Lys Asn Leu Ala Gln Pro Pro Pro Pro Gly Gly Arg Lys

1 5 10 15

Asp Lys Asp Lys Asp Lys Lys Thr Gln Gln Gly Asp Gln Gly Pro Pro

20 25 30

Gln Gly Gly Asp Lys Lys Ser Pro Gly Glu Gly Thr Pro Ala Asn Pro

Asp Asp Pro Glu Lys Pro Pro Ser Pro Pro Pro Gly Glu

50 55 60

<210> 143

<211> 60

<212> PRT

<213> Human papillomavirus type 17

<400> 143

Asp Thr Gly Gly Lys Arg Leu Ala Leu Gln Pro Pro Pro Pro Gly Thr

1 5 10 15

Lys Asp Lys Thr Ser Asp Asp Gln Gly Pro Pro His Gly Gly Asp Lys

20 25 30

Gln Ser Pro Gly Glu Gly Ser Asp Ala Ser Gly Asp Glu Asn Ala Pro

35 40 45

Thr Pro Glu Thr Pro Gln Asp Pro Pro Thr Gly Glu

50 55 60

<210> 144

<211> 62

<212> PRT

<400> 144

Glu Glu Lys His Leu Ala Leu Gln Pro Pro Pro Pro Gly Lys Lys Asp
1 5 10 15

Lys Glu Lys Thr Pro Gln Gln Gly Asp Gln Gly Pro Pro Pro Gly Gly
20 25 30

Asn Lys Gln Pro Pro Gly Glu Gly Thr Asp Ala Asp Gly Asp Glu Asn
35 40 45

Ala Pro Thr Pro Glu Thr Pro Pro Val Pro Pro Thr Gly Glu
50 55 60

<210> 145

<211> 61

<212> PRT

<213> Human papillomavirus type 9

<400> 145

Pro Pro Pro Gly Asn Lys Asp Arg Asp Lys Glu Lys Glu Lys Glu Lys
1 5 10 15

Glu Lys Glu Lys Lys Pro Thr Thr Gly Asp Lys Gly Pro Asp Pro Arg
20 25 30

Pro Pro Pro Gln Thr Pro Leu Pro Pro Pro Thr Gly Glu

50 55 60

<210> 146

<211> 57

<212> PRT

<213> Human papillomavirus type 22

<400> 146

Leu Val Leu Gln Ser Pro Pro Ser Gly Gly Lys Lys Gly Glu Arg Asp

1 5 10 15

Lys Asp Lys Lys Pro Gln Gln Gly Glu Glu Lys Pro Asp Gln Gly Pro

20 25 30

Glu Ala Pro Ser Ser Gly Glu Gly Gly Pro Pro Asp Asp Pro Ser Pro

35 40 45

Glu Asn Pro Gln Asn Pro Pro Gly Gly

50 55

<210> 147

<211> 55

<400> 147

Lys His Leu Ala Leu Gln Pro Pro Pro Gly Gly Lys Lys Asp Lys Glu
1 5 10 15

Lys Lys Pro Ser Pro Gly Glu Glu Lys Pro Asp Gln Gly Pro Gly Ala
20 25 30

Glu Ser Asn Gly Gly Gly Gly Lys Pro Lys Asp Pro Pro Pro Glu Glu
35 40 45

Pro Gln Asn Pro Pro Gly Gly
50 55

<210> 148

<211> 63

<212> PRT

<213> Human papillomavirus type 38

<400> 148

Asp Thr Gly Glu Lys His Leu Ala Leu Gln Pro Pro Pro Ala Gly Lys
1 5 10 15

Gly Lys Asp Lys Glu Lys Pro Gln Ala Pro Lys Gly Glu Glu Lys Ala
20 25 30

35 40 45

Pro Pro Pro Glu Asp Pro Gln Ser Pro Pro Pro Gly Glu Gly Glu

50 55 60

<210> 149

<211> 75

<212> PRT

<213> Human papillomavirus type 49

<400> 149

Thr Leu Val Leu Gln Gln Pro Pro Thr Pro Gly Lys Arg Ser Arg Asp

1 5 10 15

Asp Asp Pro Gly Leu Glu Pro Gly Pro Ala Asp Gly Lys Arg Ala Pro

20 25 30

Gln Gly Pro Lys Lys Pro Ala Val Pro Asp Pro Asp Pro Asp Pro Leu

35 40 45

Pro Glu Asp Pro Glu Gly Pro Glu Asp Leu Ser Gln Pro Pro Glu Ile

50 55 60

Pro Ala Pro Arg Glu Pro Ala Gly Ala Glu Gly

65 70 75

<210> 150

<211> 52

<212> PRT

<213> Human papillomavirus type 4

<400> 150

Pro Ser Arg Arg Ala Leu Leu Glu Gly Gly Asn Arg Gly Asn Pro Thr
1 5 10 15

Arg Pro Pro Pro Arg Pro Leu Lys Pro Arg Glu Tyr Asp Tyr Asp Glu
20 25 30

Asp Asp Glu Lys Glu Asn Gln Gly Pro Gly Gln Glu Lys Pro Pro Ala
35 40 45

Lys Glu Glu Glu
50

<210> 151

<211> 54

<212> PRT

<213> Human papillomavirus type 65

<400> 151

Pro Ser Leu Pro Arg Arg Ala Leu Val Val [illegible]

Leu Asn Arg Pro Pro Gln Arg Pro Pro Lys Pro Arg Gly Tyr Glu Tyr

20 25 30

Asp Glu Asp Asp Asp Lys Glu Asn Gln Gly Pro Gly Gln Glu Arg Pro

35 40 45

Pro Ala Lys Glu Glu Glu

50

<210> 152

<211> 44

<212> PRT

<213> Human papillomavirus type 48

<400> 152

Leu Glu Gly Asp Arg Ala Ser Gln Lys Thr Pro Thr Pro Ser Arg Pro

1 5 10 15

Pro Pro Arg His Pro Asp Tyr Glu Ser Asp Asp Asp Glu Asn Arg Glu

20 25 30

Asn Leu Glu Pro Pro Thr Pro Pro His Pro Ala Asp

35 40

<212> PRT

<213> Human papillomavirus type 50

<400> 153

Ala Asn Arg Lys Asp Leu Glu Ala Val Asn Gln Lys Pro Tyr Arg Thr
1 5 10 15

Pro Asn His Pro Pro Arg His Gln Gln Tyr Asp Phe Asp Glu Asp Asp
20 25 30

Glu Lys Glu Asn Thr Ile Pro Thr Asp Thr Glu Ser His Asn Gln Asn
35 40 45

<210> 154

<211> 47

<212> PRT

<213> Human papillomavirus type 60

<400> 154

Leu Pro Thr Glu Asp Arg Pro His Lys Arg Glu Ser Leu Ala Leu Pro
1 5 10 15

Lys Glu Asn Tyr Pro Pro Glu Ser Arg Pro Val Pro Lys Asp Ala

35 40 45

<210> 155

<211> 39

<212> PRT

<213> Bovine papillomavirus type 1

<400> 155

Pro Ser Leu Ser Leu Leu Cys Ser Ala Pro Pro Pro Ala Val Pro Ser

1 5 10 15

Glu Gln Ala Ser Val Gly Tyr Glu Thr Val Leu Ala Arg Thr Pro Thr

20 25 30

Ile Phe Leu Gln Ala Arg Gly

35

<210> 156

<211> 39

<212> PRT

<213> Unknown

<400> 156

Pro Ser Leu Ser Leu Leu Cys Ser Ala Pro Pro Pro Ala Tyr Pro Ser

1 5 10 15

Glu Gln Ala Ser Val Gly Tyr Glu Thr Val Leu Ala Arg Thr Pro Thr

20 25 30

Ile Phe Leu Gln Ala Arg Gly

35

<210> 157

<211> 43

<212> PRT

<213> European elk papillomavirus

<400> 157

Pro Thr Gln Pro Thr Glu Pro Cys Leu Thr Leu Leu Leu Asp Asn Pro

1 5 10 15

Pro Phe Val Ala [illegible] His Leu Ala Lys Thr Gly Val Gly Pro Phe

20 25 30

Thr Ala Arg Leu Pro Thr Ala His His His Pro

35 40

<210> 158

<211> 34

<212> PRT

<213> deer papillomavirus

<400> 158

Thr Leu Leu Leu Glu Ala Thr Pro Phe Thr Val Pro Ser Glu Leu Ala
1 5 10 15

Lys Thr Gly Val Gly Pro Leu Thr Ala Arg Leu Pro Thr Ala His His
20 25 30

Ser Pro

<210> 159

<211> 50

<212> PRT

<213> Bovine papillomavirus type 4

<400> 159

Pro Asp Leu Pro Glu Thr Pro Gly Ala Gly Ser Arg Gly Arg Ser Arg
1 5 10 15

Leu Arg Asp Arg Asp His Pro His Arg His [illegible]

Arg Thr Pro Val Asp Glu Thr Arg Gly Tyr Arg Val Pro Gly Asp Pro

35 40 45

Arg Glu

50

<210> 160

<211> 50

<212> PRT

<213> Human papillomavirus type 41

<400> 160

Pro Gln Arg Tyr Tyr Asp Arg Arg Gly Arg Asp Asp Ala Glu Thr Arg

1 5 10 15

Lys Arg Gly Ser Arg Ser Pro Gln Pro Leu Ser Glu Asp Glu Glu Leu

20 25 30

Thr Asp Ala Asp Pro Pro Arg Arg Pro Asn Ala Gly Pro Arg Arg Arg

35 40 45

Leu Phe

50

<212> PRT

<213> Canine oral papillomavirus

<400> 161

Leu Pro Pro Gly Lys Gly Arg His Gly Gly Leu Asp Gly Gly Arg Arg
1 5 10 15

Gly Ser Pro Glu Gly Gln Glu Asp Glu Glu Asp Ser Asp Glu Glu Glu
20 25 30

Ala Glu Asn Tyr Pro Pro Ser Arg Ser Arg Pro Arg Arg Gly Arg
35 40 45

<210> 162

<211> 34

<212> PRT

<213> Unknown Organism

<220>

<223> Description of Unknown Organism: cottontail rabbit papillomavirus

<400> 162

Gln Gly Pro Lys Pro Arg Val His Trp Ala Asp Glu Gly Gln Gly His
1 5

20 25 30

Thr Lys

<210> 163

<211> 61

<212> PRT

<213> Unknown Organism

<220>

<223> Description of Unknown Organism: Rabbit Oral Papillomavirus

<400> 163

Leu Gln Tyr Pro Gln Ala Pro Arg Thr Ile Arg Lys Pro Arg Ser Ser
1 5 10 15

Arg Tyr Arg Gly Arg Phe Leu Val Thr Asp Gly Gly Asp Pro Asp Pro
20 25 30

Gln Glu Leu Asp Ser Thr Gln Gln Asp Pro Glu Asp Lys Glu Asn Ile
35 40 45

Pro Pro Thr Leu Thr Pro Thr Pro Leu Ile Leu Thr

<210> 164

<211> 48

<212> PRT

<213> Human papillomavirus type 1a

<400> 164

Thr Pro Pro Ser Asn Arg Arg Pro Ser Thr Thr Pro Asn Ser Gln Asp
1 5 10 15

Arg Gly Arg Pro Arg Arg Ser Asp Lys Asp Ser Arg Lys His Leu Tyr
20 25 30

Ala Asp Gly Leu Thr Asp Gly Glu Asp Pro Glu Val Pro Glu Val Glu
35 40 45

<210> 165

<211> 4

<212> PRT

<213> Human papillomavirus type 63

<400> 165

Arg Arg Leu Phe Ala Ser Asp Gly Pro Thr Asp Glu Glu Gly Pro Glu

20 25 30

Val Pro Glu Ile Pro Pro Ser Asp

35 40

<210> 166

<211> 48

<212> PRT

<213> Mastomys natalensis

<400> 166

Ile Pro Arg Val Ser Leu Gln Asp Lys Thr Thr Gly Gly Asn Gln Gln

1 5 10 15

Arg Arg Arg Arg Arg Gly Glu Arg Gly Ala Arg Thr Pro Ser Pro Glu

20 25 30

Thr Thr Ala Gln Arg Pro Lys Arg Pro Arg Arg Ala Cys Thr Arg Lys

35 40 45

<211> 15

<212> PRT

<213> Human papillomavirus type 16

<400> 167

Arg Pro Ile Pro Lys Pro Ser Pro Trp Ala Pro Lys Lys His Arg
1 5 10 15

<210> 168

<211> 12

<212> PRT

<213> Human papillomavirus type 16

<400> 168

Pro Lys Pro Ser Pro Trp Ala Pro Lys Lys His Arg
1 5 10

<210> 169

<211> 14

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: [illegible]

<400> 169

Met Ala Asp Pro Ala Ala Ala Thr Lys Tyr Pro Leu Cys
1 5 10

<210> 170

<211> 8

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 170

Leu Leu Arg Gly Ala Phe Asp Tyr
1 5

<210> 171

<211> 11

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 171

Asn Ser Arg Asp Ser Ser Gly Gly Asn Ala Val
1 5 10

<210> 172

<211> 8

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic peptide

<400> 172

Leu Val Gln Gly Ser Phe Asp Tyr
1 5

<210> 173

<211> 8

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic

<220>

<223> Description of Artificial Sequence: synthetic oligonucleotide

<400> 175

taatacgact cactataggg agacaagaat aaacgctcaa 40

<210> 176

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic oligonucleotide

<400> 176

gcctgttgtg agcctcctgt cgaa 24

<210> 177

<211> 90

<212> DNA

<213> Artificial Sequence

gggagacaag aauaaacgcu caannnnnnn nnnnnnnnnn nnnnnnnnnu ucgacaggag 60

gcucacaaca ggc 73

<210> 179

<211> 4

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic peptide

<400> 179

Asp Glu Ala Asp

1